

BIZEOLCAT

BIFUNCTIONAL ZEOLITE BASED CATALYSTS AND INNOVATIVE PROCESS FOR SUSTAINABLE HYDROCARBON TRANSFORMATION

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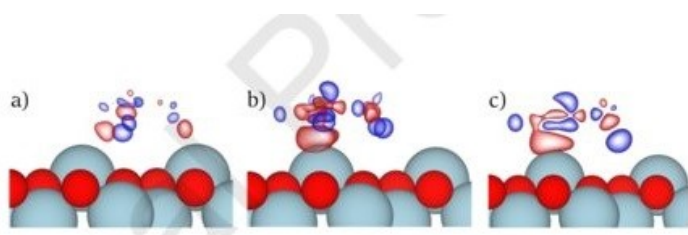
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WHAT'S NEW?

Due to the COVID – 19 emergency several research activities have been delayed, nevertheless, in respect of the planned work, BiZeolCat Project is glad to inform you about the main results achieved during the first 6 months of the second year of work.

Hoping this extraordinary situation will recover soon and that a richer set of news is available in the close future, BiZeolCat people recommend you stay safe and enjoy the newsletter reading!

Kinetics of non-oxidative propane dehydrogenation on Cr₂O₃ and the nature of catalyst deactivation from first-principles simulations



As the global demand for propene (propylene) is increasing, classic commercial production processes are becoming unable to keep up. Non-oxidative dehydrogenation, although hitherto underutilised industrially, has been put forward as a viable and

green alternative, which is already used in a few commercial processes. The BiZeolCat partners Department of [Catalysis and Chemical Reaction Engineering of National Institute of Chemistry \(Slovenia\)](#) developed detailed first-principles calculations of Propene Non-oxidative dehydrogenation reaction over a chromium oxide catalyst, which is the cornerstone of the Catofin® process. For the complete manuscript visit:

Free download of [Pre-print](#)

Purchase at Publisher: [Journal of Catalysis - B. Likozar et al.](#)

BiZeolCat Project addresses EU Environment Circular Economy Actions

From March 2020, the European Commission has adopted a new [Circular Economy Action Plan](#) - one of the main blocks of the **European Green Deal**, Europe's new agenda for sustainable growth.

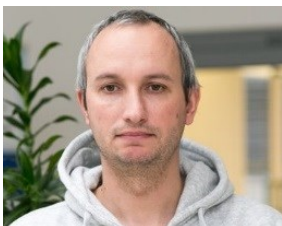
Circular Economy Action Plan provides a future-oriented agenda for achieving a cleaner and more competitive Europe through designing sustainable products and promoting circularity in production processes.



BiZeolCat objectives aim to lower carbon footprint of refining industry by reducing gas flaring and converting these gases in valuable products as olefins and aromatics, in coherence with the following pillars of the agenda:

- improving product durability, reusability, upgradability and reparability, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency;
- increasing recycled content in products, while ensuring their performance and safety;
- enabling remanufacturing and high-quality recycling;
- reducing carbon and environmental footprints;

What are the **BiZeolCat** participants thoughts/feelings about this initiative?
Find some comments here!



Blaž Likozar ([National Institute of Chemistry](#)- Slovenia):
"Green Deal is an opportunity for EU to promote its leading position in engineering, which demand a transition from the tradition to renewables."



Ilaria Perissi ([European Research Institute of Catalysis](#) - Belgium):
"I believe the Circular Economy Action Plan is fundamental to give clear production lines to research and businesses to achieve the goals of the Green Deal."



Marcos Rodriguez Vara ([Asociación Española de Normalización](#) – Spain):
"Addressing the transition from the current economic model to a new one based on the circular economy is one of the great challenges that have the activity sectors and public administrations. This is because of the current model is unsustainable, given the scarcity of existing resources."



Trond Halvorsen ([SINTEF](#) – Norway)
"The Circular Economy Action Plan sets a pace for the changes that are coming. This is very important for companies that are considering adjustments to their production processes. The plan also serves as an inspiring example to other countries outside of the EU that also seek a sustainable future."



Serdar Çelebi ([TUPRAS](#) - Turkey):

“The aim of BIZEOLCAT project is in-line with the European Green Deal in terms of sustainable, clean and circular economy. Through the application of the research performed in scope of BIZEOLCAT, economy of the production of chemicals will be improved and carbon footprint of oil and gas industry will be reduced.”

More info at the project's website: www.bizeolcat.eu

BiZeolCat in practice. Status and future perspectives of membrane reactor technology. An interview to Fausto Gallucci - TU Eindhoven

“**A rolling stone gathers no moss**” said professor [Fausto Gallucci](#) meaning that “If you want to make a big change, you have to be active!”

Fausto Gallucci is full professor at the Inorganic Membranes and Membrane Reactors Department at the Technical University of Eindhoven and WP3 Leader on “**Catalytic testing and optimization**” in BiZeolCat. His research focuses on the interaction of heterogeneous catalysis, transport phenomena, and fluid mechanics to develop novel multifunctional membrane reactors to promote the membrane-



assisted propane and butane/butenes dehydrogenation processes. This represents a breakthrough application would demonstrate that reactors based on membrane technologies are stable, reliable and feasible to approach the market in a few years. Fausto said: “We need a breakthrough application and then the industry will invest in it. A few years ago, nobody would use membranes for water or wastewater applications

but now most of the water treatment processes have relied on membranes: what we need is to show that this kind of systems can work for a long time without any problem". Challenging but possible! Enjoy the prof. Gallucci full interview [here!](#)

BIZEOLCAT EVENTS

4th VIRTUAL GENERAL ASSEMBLY



The 4th BiZeolCat General Assembly took place Online to assess the project's achievements at Month 18!

The main objectives of the meeting were the assessment of the project's achievements (milestones and deliverables) and the development of the plan for the next steps. The meeting was very intensive and all the participants collaborate actively providing a friendly atmosphere and strengthening the relationships among the partners even remotely connected. All the topics in Agenda were successfully addressed!

UPCOMING EVENTS

2020 Dissemination Activities

Several dissemination events were planned for the year 2020, however, due to the covid19 emergency, most of them have been rescheduled. Here the latest news on which are still in the Project dissemination plan.



19th Nordic Symposium on Catalysis - Finland 24-26 August 2020---
will be rescheduled soon!

Our Partner from National Institute of Chemistry (Slovenia) planned to present results on:

“Non-oxidative dehydrogenation of propane on chromium(III) oxide: an ab initio study of reaction kinetics and catalyst deactivation”

M. Huš, D. Kopač, B. Likozar

International Congress on Membranes & Membrane Processes 2020 - United Kingdom
to 6-11 December 2020



Our Partner from Technical University of Eindhoven (Netherland) planned to present results on **“Effect of silver on H₂ permeance through novel Pd-based membranes in presence of light hydrocarbons”**

C. Brencio, F. Fontain, Jose A. Medrano, F. Gallucci

International Symposium on Chemical Reaction Engineering (ISCRE26) India – New Delhi
- December 2020

Our Partner from National Institute of Chemistry (Slovenia) planned to present results on:

Propane dehydrogenation on Cr₂O₃: kinetics and mechanism of the reaction and catalyst deactivation

M. Huš, D. Kopač, B. Likozar



BIZEOLCAT Website

Visit the BIZEOLCAT project at the address – www.bizeolcat.eu and follow the project on LinkedIn, Twitter and YouTube.

Let us have your comments!

The next issue of the Newsletter will be released in December 2020

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